

# The Japanese Kudzu Vine

The New Forage, Nitrogen-Producing Plant so Rapidly Coming into Prominence Throughout the South

Plants that will grow forage and that will at the same time put nitrogen into the soil and act as a covering or protection to the land, have a value that is being daily recognized by the farmer and all those interested in agricultural pursuits and stock raising.

Below we give an article from the pen of E. C. Pleas, of Chipley, Fla., that will be read with deep interest by the farming class and all those interested in stock raising. Mr. Pleas has the distinction of having introduced and propagated the Japanese Kudzu vine, the greatest thing yet discovered as a forage and covering plant, as well as a nitrogen gatherer.

The question of permanent pasture is a most important one to the southern farmer, for to successfully raise stock he must have permanent pasture of good quality, something better than the native wiregrass, carpet grass or Bermuda grass. These are all desirable in the absence of anything better, but all combined fall short of keeping stock in perfect condition throughout the summer and fall, even when stock have free access to an unlimited area.

The time is not far off when the farmer can no longer depend on the public range, and even now it pays to grow most forage in the field. We have for winter pasture, oats, rye, etc. Then there the native grasses for a while in the spring, and the velvet bean in the fall, but there is a gap between that can only be filled by the frequent planting and cultivation of various annuals, more or less unsatisfactory.

The forage plant that will tide the farmer and stock raiser over the long, hot, dry summer, as well as the rainy season, will fill a long-felt want. Kudzu will do it.

## An Ideal Pasture Plant

"After several years' experience with the Kudzu vine (*Pueraria thymifolia*), I find it a most admirable forage for this purpose. What is more, it is perennial; it is one of the first things to start in the spring, and stays by us until after killing frosts.

"It is ready to pasture here in west Florida (latitude 31 degrees) by April 1, or even earlier, having the ground thoroughly covered with new growth by that time, and if desired for hay, can be cut May 1, making as much growth by May as the velvet bean makes in an entire season. It comes again quickly after cutting, and in two weeks time has the ground almost obscured. It is more easily cured than the velvet bean, which it greatly resembles in appearance and manner of growth. But it only needs to be planted once and cultivated the first season, taking care of itself after that, and all the owner needs to do is to keep it cut, if wanted for hay, or to turn the stock from one lot to another in pasturing. When divided into three or four lots and pasturing in succession, more stock can be supported on a given area than by allowing them full range.

## History of the Kudzu

"Kudzu is a native of Japan, and its history in the United States dates back to the Centennial at Philadelphia, in '76, when it was brought over by the Japs to shade their buildings at the exposition. It serves many purposes in Japan, being used as an ornamental vine as well as a forage. A fine quality of starch and also fibre are made from its pulp. There it is planted on rocky hillides and waste places, and land that would be otherwise practically useless is thus made to yield good returns. It has been pointed out that most all the fruits, flowers and other botanical introductions from Japan have proven desirable acquisitions to American agriculture.

"The Kudzu vine is no exception, and I believe is destined to soon become the most important plant in introduced in the south since the advent of cotton. While it has been grown in the United States for over thirty years as an ornamental vine, it remained for me to discover its great possibilities as a forage plant for the south. I had secured a few seeds from Japan to try it as a shade for our summer-house on the front lawn. The first year it made only a few feet of growth, but the second year it sent out long, trailing vines all over the grass, and after the lawn-mower had passed over it, the large dead leaves looked so bad we decided to get rid of it.

## Discovered by Chance

"The next spring, 1904, I grubbed them all out and was going to throw them on the brush pile, but my wife proposed planting them around it to see if they would not cover it and hide it from view, as it was necessary to receive trimmings from the trees, roses, etc., about the grounds. So three plants were set out around

it, and by the fall of 1905 they had covered a space of about 50x80 feet (all this is available between our garden, barn, drive and neighbor's pasture lot) to a depth of two and one-half feet, practically as is shown in the accompanying photograph.

"It was not until the vines began creeping through the bars to the horse-shed and the fence on the neighbor's side that I suspected its value as stock feed. My horse simply got down on his knees, reached under and nipped every leaf that came within two feet of the bars, while the neighbor's horses, when turned into that adjoining lot, would make for the Kudzu vines the first thing and never leave until the last leaf in reach was eaten.

## Rich in Nutrition

"I began to investigate. I cut some of it for hay, and found it cured much

woody and rooted to the ground. After the first cutting each year the vines are short and thickly set and have no tendency to take root.

"It has been suggested by high authority that this vine might prove of inestimable value in reclaiming the worn-out fields of the south, as well as preventing washes on the clay hill-sides, as its roots penetrate the soil to a great depth in all directions, and the vines, taking root at the joints, are enabled to catch the drift on top and hold the soil beneath.

"If one is to judge its powers as a soil renovator or nitrogen gatherer from the number of bacteria nodules that form on rootlets at certain stages of their growth, I have never seen its equal. The portion of a root shown in the accompanying cut bore 250 nodules, by actual count, and is but an average specimen, while I had

can be got rid of, and if it doesn't become a pest. To this I answer, plant it where it can stay, and you will never want to get rid of it so long as there is a good market for stock. A small patch plowed under last fall has only shown one or two plants this season.

"The first cutting of Kudzu hay each season is taken off before the vines have rooted sufficiently to interfere with the cutting or raking, and after that there is seldom if any attempt to take root, as the growth then is so small and fine and closely set that the vines cannot trail on the ground, and consequently cannot take root. With a good strong plant to every foot of space, or even closer, (and Kudzu never crowds itself out), producing half a dozen or more vines from twenty-five to thirty feet in length, with numerous side branches, in a few weeks, or an equivalent in the shorter finer growth of after cuttings, one can form some sort of an idea of Kudzu's tremendous productivity.

"The after cuttings (all after the first crop each year) are little, if any, more trouble to handle than a heavy crop of clover or pursley hay.

"It has been clearly demonstrated the past season that all stock is fond of it both as a pasture and a hay. A friend having a piney woods cow that could not be induced to touch ordinary crabgrass, pursley or velvet bean hay, was given a handful of Kudzu hay to take home and offer her, and his report was that 'the cow nearly tore the fence down trying to get to the hay that had been thrown down beside it.' A neighbor's hogs tore through the poultry netting fence a number of times to get at the growing vines.

"One correspondent writes that his chickens are very fond of it. Another that rabbits eat it in preference to anything else. No wonder stock like it when we learn that it analyzes better than wheat bran, the new growth running as high as 17.60 per cent. protein.

"From the four cuttings of hay this season (the last being taken off September 18th), I have realized, by careful weights and measures, at the rate of 10.93 tons, dry hay, per acre.

"And when we consider that one acre of Kudzu on ordinary piney woods land will yield more in value than five acres of the best cotton, and at practically no expense, after once established, save the harvesting, and at the same time improves the soil instead of impoverishing it, we can

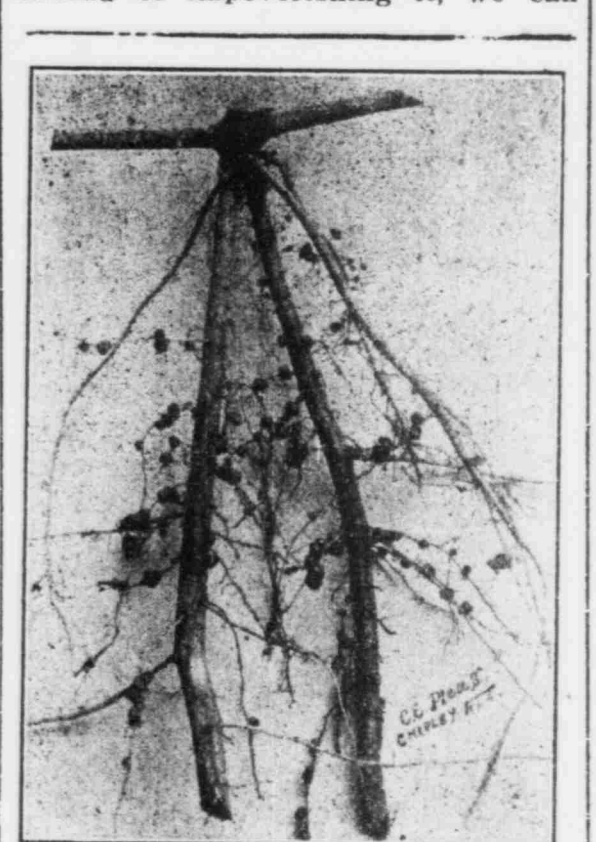


Photo of Vines, June 1, 1907, Showing Growth on 12-foot Pole in Fore-ground, Made in Thirty Days From the Time Vines Reached the Base of the Pole.

quicker than the velvet bean or cowpea hay, and subsequent experience has proved it retains its bright green color even after exposure to the light and air for a year, and I have never smelled sweeter hay.

"I sent a small bale of the hay to the commissioner of agriculture at Tallahassee for examination, and here is what the state chemist, Capt. R. E. Rose, says about it, in part:

"Dear Sir—I enclose 'result of analysis of Japanese Kudzu vine hay. It compares favorably with cowpea and velvet bean hay. Your sample was particularly well cured and put up. Find the analysis of the sample is above the average farm-cured hay.

	Protein	Sugar	Fibre	Fat
Cowpea, . . .	16.0	42.20	20.1	2.2
Velvet Bean, . . .	14.7	41.00	29.7	1.70
Beggarweed, . . .	21.7	30.20	24.7	2.30
Kudzu, . . . . .	16.59	32.81	40.09	1.68

"The analysis shows a little better than cowpea or velvet bean, but not quite so good as the beggarweed.

"Yours, etc.,

"R. E. ROSE."

## Nature and Growth, Etc.

"Thus it will be seen that the Kudzu is second in point of feed value, and when we consider its many other good qualities, it stands easily at the head of the list.

"As stated before, it is perennial and 'closely resembles the velvet bean' (belonging to the same great order of plants, Leguminosae), but one planting and cultivating the first season serves for a life time, if desired.

"Stock do not seriously injure the vines by trampling on them, as with the velvet bean, and even if they do, the vines having rooted where touching the ground, quickly put out new growth. It does not have to be cut at any certain time, as with most forage plants, but the earlier it is cut, and the oftener, the more hay it will produce. It seems best adapted as a pasture, however, as one would experience the same trouble in harvesting the first cutting, each season, as with the velvet bean, all after cuttings being of short fine growth, thickly set and as easily handled as a heavy crop of clover or pursley. Yet I have cut some heavy crops of velvet beans very successfully with both one and two horse mowers, and while I have not grown the Kudzu to the extent of cutting with a mower, I see no reason why it should not be as easily cut and harvested, if not left until the vines get old and

on exhibition at Tampa and Jacksonville this last winter specimens showing upwards of two thousand of these nodules to the plant no larger than the one here shown.

## Propagation and Planting

"The Kudzu produces numerous clusters of delicately fragrant blossom of brilliant purple, much in the same manner as the wisteria, but so far as known it rarely seeds in America, and is propagated by means of the rooted joints, set six to ten feet apart, and kept cultivated until the vines reach out, and prevent it.

"Just how far north it will succeed as it does here in Florida remains to be tested, though it is hardy as far up as Nova Scotia. There it merely sheds its leaves in cold weather, the matured vines living over.

"The Kudzu seems to be adapted to any soil, rich or poor, wet or dry, though the richer the land the better it will succeed. When I bought my land eleven years ago it would not make over five bushels of corn per acre, it was so worn out and run down, being one of the oldest pieces in cultivation here. Since I got it, it has not had enough fertilizer, all told (on the part where the vine is located) to make one generous application, and yet the Kudzu appears to be on rich land, and I cut thirty pounds of dry hay from a space of 15x15 feet in July, 1907, and in two weeks after it was nearly knee deep again. Vines from a mature plant have made the enormous growth of 28 feet in two weeks' time, with half a dozen side branches, some of them twelve feet long, and yet that land has never been broken or cultivated in any way since years before the three plants were stuck out and allowed to fight their way among the weeds and briars.

"Bales of the hay and specimen roots and vines were on exhibition at the Gulf Coast and Florida state fairs the last two years, as well as at the Jamestown and Jacksonville exhibitions and Georgia state fair, and did not fail to create widespread interest wherever shown.

"I find that plants are best set out early in the spring of the year. I put out an acre in February, 1908, and many of the plants had vines ten feet long May 1, though I expect it to take them another year to get fully established.

"I have been asked by many if it

# THE PALE HORSE AND HIS RIDER

(Sermon preached by C. C. Carroll, Sunday, March 14th, 1909, at the Baptist church, and reproduced at the request of the Woman's Club, Ocala, Florida.)

The Scriptures 3 John 2: "Beloved, I wish, above all things, that thou mayest prosper and be in health, even as thy soul prospereth."

Rev. 6:8: "And I looked, and behold a pale horse; and his name that sat on him was Death, and Hell followed with him. And power was given unto them over the fourth part of the earth, to kill with sword, and with hunger, and with death, and with the beasts of the earth."

The ideal condition of man, as depicted in the Word of God, is one of health. The Bible teaches us that in the beginning when God created man of the dust, or elements of earth, and breathed into his nostrils the breath of life, that he became a living soul. He meant for him to be well; that he know no disease, nor sorrow; there was to be no pain attached to his waking hours, and no troubled dream to disturb him by night.

The work of his hands was to be accomplished, but without the sweat of his brow. It was sin and its entrance that brought death into the world. This death was of a two-fold kind—a spiritual death, which meant a separation of the soul of man from his Creator; and physical death, that meant the dissolution of body and soul.

This spiritual death brought with it anxiety, and sin rooted sorrow in the brain, diseased the mind, and made man prone to trouble as the sparks fly upward.

This physical death was to be preceded by every phase of physical suffering: blindness of the eyes, palsied hands, weakened brains, congestive lungs, dwarfed bodies, lame feet; in fact, all the ills to which flesh is heir. The picture of man redeemed by our Lord and Saviour, Jesus Christ, is the picture of a perfect man—a man whose soul is in harmony with his God, and whose body, in the power of his resurrection from the dead, is perfect. From his mind sorrow and sighing shall flee away, and the Son of God shall wipe away all tears from his eyes. Pain shall fall from him like a garment; age shall lose its power; death shall be robbed of its sting, and the grave of its victory.

This plan of redemption, however, for man, through the vicarious atonement of the Son of God, is two-fold in its process. So far as the spiritual mind is concerned, repentance toward God, and faith in the Lord Jesus Christ mean a regeneration, so that he becomes a new creature in Christ Jesus. He passes out from under the law of sin and death into the glorious liberty of the children of God. It can be said of him: "Beloved, now are we the Sons of God." It is a perfect work of salvation, as Christ is the end of the law for righteousness to all that believe, and it means the sanctification ultimately of the soul.

The physical effects, however, of this salvation are delayed in their final powers until the resurrection of the dead, so that the spirit is alive because of righteousness, but the body is dead because of sin. The effects of the spirit being alive, however, are such that the body can be subjected unto the law of God, and the results of that subjection will carry with them the fulfillment, to a great extent, at least, of the desire of John, as quoted in the scripture: "Beloved, I desire above all things that thou mayest be in health."

All disease is primarily the result of sin, and in its last analysis, which is death, it will be done away with by the power of the Son of God unto all who believe. But the study of disease, so far as individuals are concerned, will go to show that as individually applied they are the result of any one of several different things. Disease may be inflicted directly through God as a punishment. There are various examples of this given in the scripture; for instance, Miriam, in a sin against Zipporah, and Uziah, in his profane entering the Holy of Holies, were both afflicted with leprosy. There are numerous other examples. Again, disease may be from the power of evil, or the Devil, through the permissive power of God, notably the case of Job. Again, disease may be the inevitable results from a physical standpoint of the sins of the father visited unto the children unto the third and fourth generation. Disease may be the result of wilful transgression of nature's laws, and in such instances, as a general thing, it will be found that there was a moral transgression at the same time.

"Be not deceived, God is not mocked; whatsoever a man soweth that shall he also reap. He that soweth to the flesh shall of the flesh reap corruption."

Disease may be the result of ignorance, but ignorance itself is no excuse before the law. In the study of history we are compelled to look back

with untold sorrow, and with a grief unspeakable, at the ignorance of men, and of nations, which resulted in great epidemics of plague and pestilence.

The Bubonic plague, Asiatic cholera, yellow fever, small pox, typhoid, and others of similar type, have carried off their thousands, yea, tens and hundreds of thousands, and their victims were ignorant of either the source or cure of the malady that struck them down.

The unsanitary conditions of the dark ages, and the middle ages, and, in fact, modern ages, is largely, almost entirely, the source of disease. Most diseases have their fifth-birth. A witty Frenchman, in speaking of the middle ages, spoke of them as a thousand years without a bath. Uncleanliness is pathogenic.

Again, disease may be the result of negligence and carelessness, even when we know its source or cure.

And last to be mentioned, disease may be the result of infection, carrying with it no moral taint, no moral obliquity, but only the heaviness of sorrow and the pangs of death.

Whatever may be the causes of diseases, whether they be the results of transgression of the law, moral or physical; whether they be inherited; whether they be of fifth; whether they be through carelessness or negligence; whether they be through innocent infection—they are none the less terrible.

But any diseased person, man, woman or child, regardless of the cause, should have the profound pity and sympathy of all. Even though the suffering one can say with the psalmist: "Thou hast made me to possess the sins of my youth, and my sin is in my bones," nevertheless, sorrow and sympathy should be his portion. And how doubly great should be that sympathy, and that unutterable love, for the innocent ones unto whom this fell harbinger of death has brought his message.

But sympathy and sorrow are not sufficient; to weep with those who weep is not enough, in the light of the dictates of self-preservation, race preservation, scientific demonstration and the law of God. When Jesus Christ came into the world, one of the strongest proofs he offered of his divinity was the power he exercised over the diseases of the body. He laid his cool hand upon the brow of the leper, and the scales of leprosy fell away. His soothing voice banished the fever from the veins of his victim. His potent finger tips touching the eyes of the blind brought back heavenly day unto those dark orbs. The very hem of his garment was instinct with the grace of healing. He caught Jairus' daughter by the hand, and she awoke from her sleep of death. The pronation of his arm stayed the funeral procession, and restored unto the widow of Nain her only son. The vocal command from those lips, soon to become themselves blue with dissolution, called forth the dead Lazarus from his rocky sepulchre.

I do not believe in the present day and time we have the divine gift of healing, such as Christ possessed, and the apostolic day knew, but I do believe we have the power at the present time, in the light of the laws of nature which we have searched out, and the laws of God we have received, to obviate most of the physical suffering of the world, and to prolong the days of man on earth. But it costs money!

In the wonderful vision that John received on the island of Patmos, there rode forth from under those mighty seals, the four horses, the first white, upon which sat the conquering One, the red bestrode by the power of war, with bloodshed to be his portion and carnage his mission. The black, upon which was seated ghastly famine, drying up the rivers with his drought, and blasting the green fields with his curse; and the fourth, the pale horse, upon whose gaunt withers was clinging the figure of Death, going forth in his hideous journey, dogged by Hell itself. Unto this figure was given power to slay, to give death through various causes, but most of all death through the beasts of the field.

It may be a forced interpretation, it may be an erroneous exegesis, but it would seem to me the beasts of the field do not include alone the wild animals that destroy. True, thousands die annually through the bite of serpents; thousands annually fall victims to the ravening tooth and claw, beak and talons, of the beasts of prey—but the greater death, and the more terrible, is through those minute organisms, so small that by the thousands they can rest upon the point of a pin, and so deadly that in their multiplication they can wipe nations from the face of the earth.

We have learned to know the greatest enemies of man's physical health are not alone the visible and tangible ones against which the normal eye, or ear, or nostril, or taste or touch, can give warning, but those invisible foes so small it requires the most powerful microscope to bring forth with startling vividness their deadly beings. Indeed, they are best known by their results, and it was a

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